

# ABSTRACT

The object of the invention is to provide a semiconductor device having a nitride-based hetero-structure in which an epitaxial nitride film has a uniformly flat surface at a single molecule level, and a method of easily fabricating such a device. The object of the invention is achieved by providing a semiconductor device comprising a sapphire substrate whose c-surface is modified to be nitride-surfaced, GaN buffer layer, N polarity GaN layer, N polarity AlN layer, N polarity InN/InGaN multi-layered device structure, Al polarity AlN layer, and GaN cap layer.